



BZB100A-Q

Bidirectional Zener diode

5 August 2025

Product data sheet

1. General description

Bidirectional Zener diode in a SOD323 (SC-76) very small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Non-repetitive peak reverse power dissipation: $P_{ZSM} \leq 30$ W
- Bidirectional configuration
- Small plastic package suitable for surface-mounted design
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- General regulation functions
- Overvoltage protection for ElectroLuminescent (EL) driver circuits

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per device						
V_Z	working voltage	$I_Z = 1$ mA; $T_j = 25$ °C	95	-	105	V
I_{ZSM}	non-repetitive peak reverse current	$t_p = 100$ µs; square wave; $T_j = 25$ °C prior to surge	-	-	0.23	A

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K1	cathode (diode 1)	 SC-76 (SOD323)	 006aab041
2	K2	cathode (diode 2)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BZB100A-Q	SC-76	plastic, surface-mounted package; 2 leads; 1.3 mm pitch; 1.7 mm x 1.25 mm x 0.95 mm body	SOD323

7. Marking

Table 4. Marking codes

Type number	Marking code
BZB100A-Q	AT

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit	
Per device						
I_{ZSM}	non-repetitive peak reverse current	$t_p = 100 \mu s$; square wave; $T_j = 25 \text{ }^\circ C$ prior to surge	-	-	0.23 A	
P_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 10 \mu s$; square wave; $T_j = 25 \text{ }^\circ C$ prior to surge	-	-	30 W	
			-	-	75 W	
P_{tot}	total power dissipation	$T_{amb} \leq 25 \text{ }^\circ C$	[1]	-	-	300 mW
			[2]	-	-	540 mW
			[3]	-	-	830 mW
T_j	junction temperature		-	-	150 $^\circ C$	
T_{amb}	ambient temperature		-55	-	150 $^\circ C$	
T_{stg}	storage temperature		-65	-	150 $^\circ C$	

[1] Device mounted on an FR4 Printed-Circuit-Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm^2 .

[3] Device mounted on a ceramic PCB, Al_2O_3 , standard footprint.

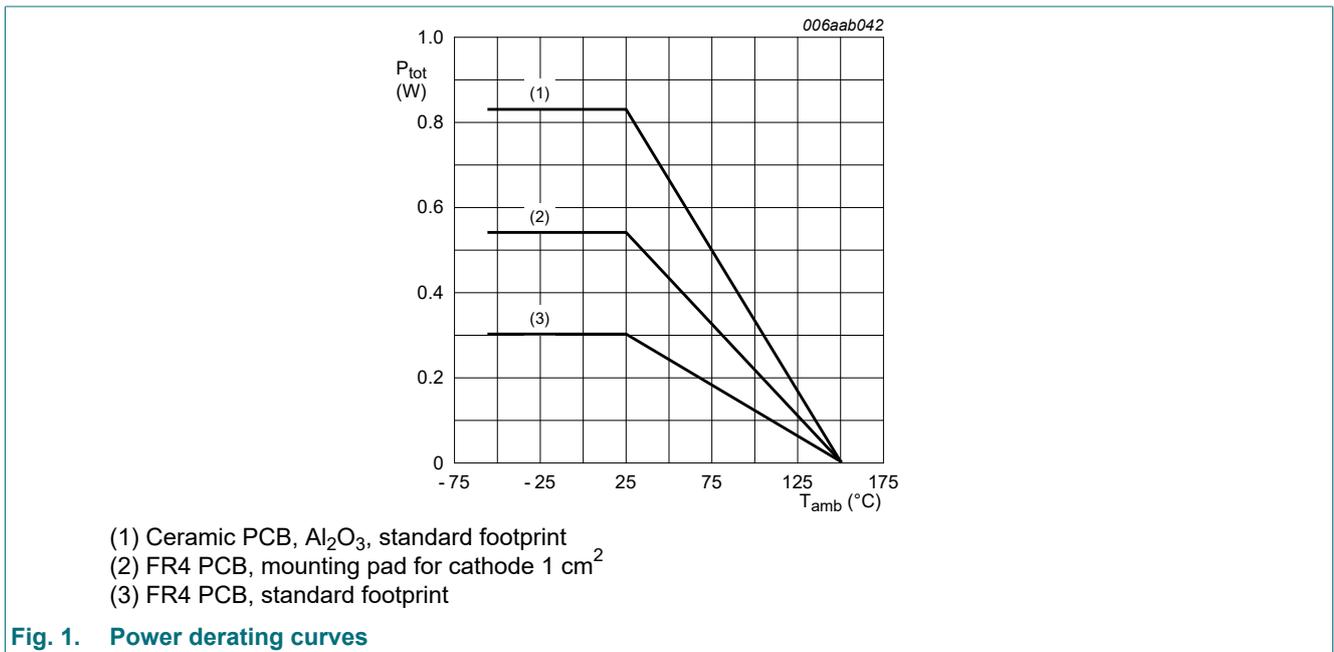


Fig. 1. Power derating curves

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	415	K/W
			[2]	-	-	230	K/W
			[3]	-	-	150	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	90	K/W

- [1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².
- [3] Device mounted on a ceramic PCB, Al₂O₃, standard footprint.
- [4] Soldering point of cathode tab.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
V_Z	working voltage	$I_Z = 1 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		95	-	105	V
r_{dif}	differential resistance	$I_Z = 1 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	-	700	Ω
I_R	reverse current	$V_R = 76 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$		-	-	0.05	μA
S_Z	temperature coefficient	$I_Z = 1 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	123	-	mV/K
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0; T_j = 25 \text{ }^\circ\text{C}$		-	-	10	pF

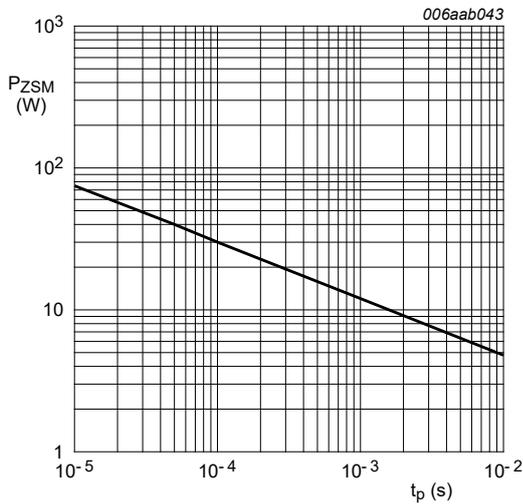


Fig. 2. Non-repetitive peak reverse power dissipation as a function of pulse duration; maximum values
 $T_j = 25 \text{ }^\circ\text{C}$ (prior to surge)

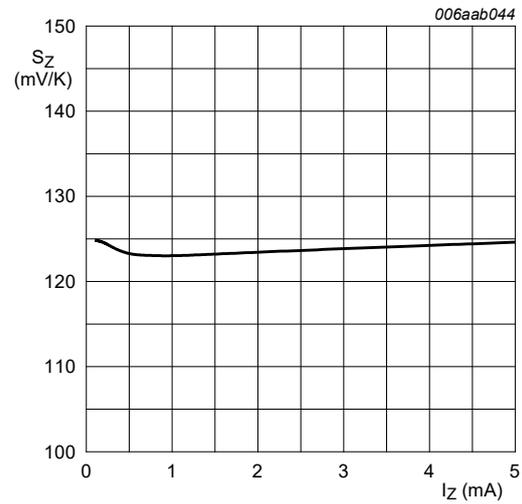
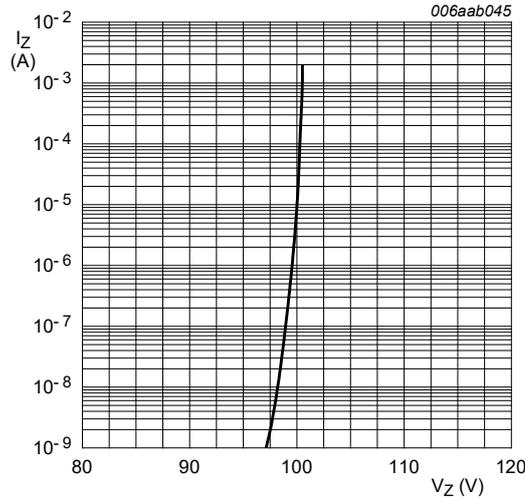


Fig. 3. Temperature coefficient as a function of working current; typical values
 $T_j = 25 \text{ }^\circ\text{C}$ to $150 \text{ }^\circ\text{C}$



$T_j = 25\text{ }^\circ\text{C}$

Fig. 4. Working current as a function of working voltage; typical values

11. Application information

High-voltage Zener diodes can be used as overvoltage protection diodes for Integrated Circuits (IC) due to their ability to cut off the applied voltage at a well-defined value. One important application is the protection of EL driver circuits where a driver IC is connected to an EL foil. Since both the foil as well as the IC are sensitive against voltage overstress, it is necessary to install an additional protection device in the circuit. Commonly, a peak-to-peak voltage of 220 V should not be exceeded, such that two 100 V diodes in bidirectional configuration are used.

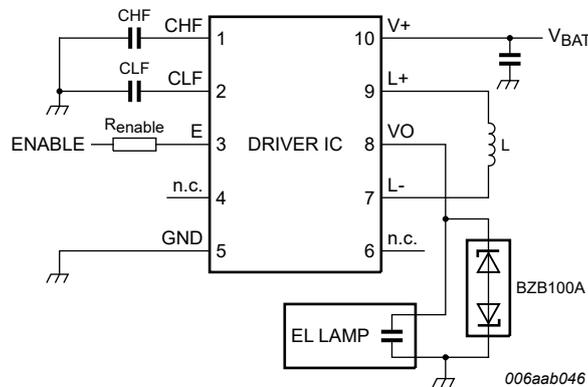


Fig. 5. Application diagram

12. Test information

Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

13. Package outline

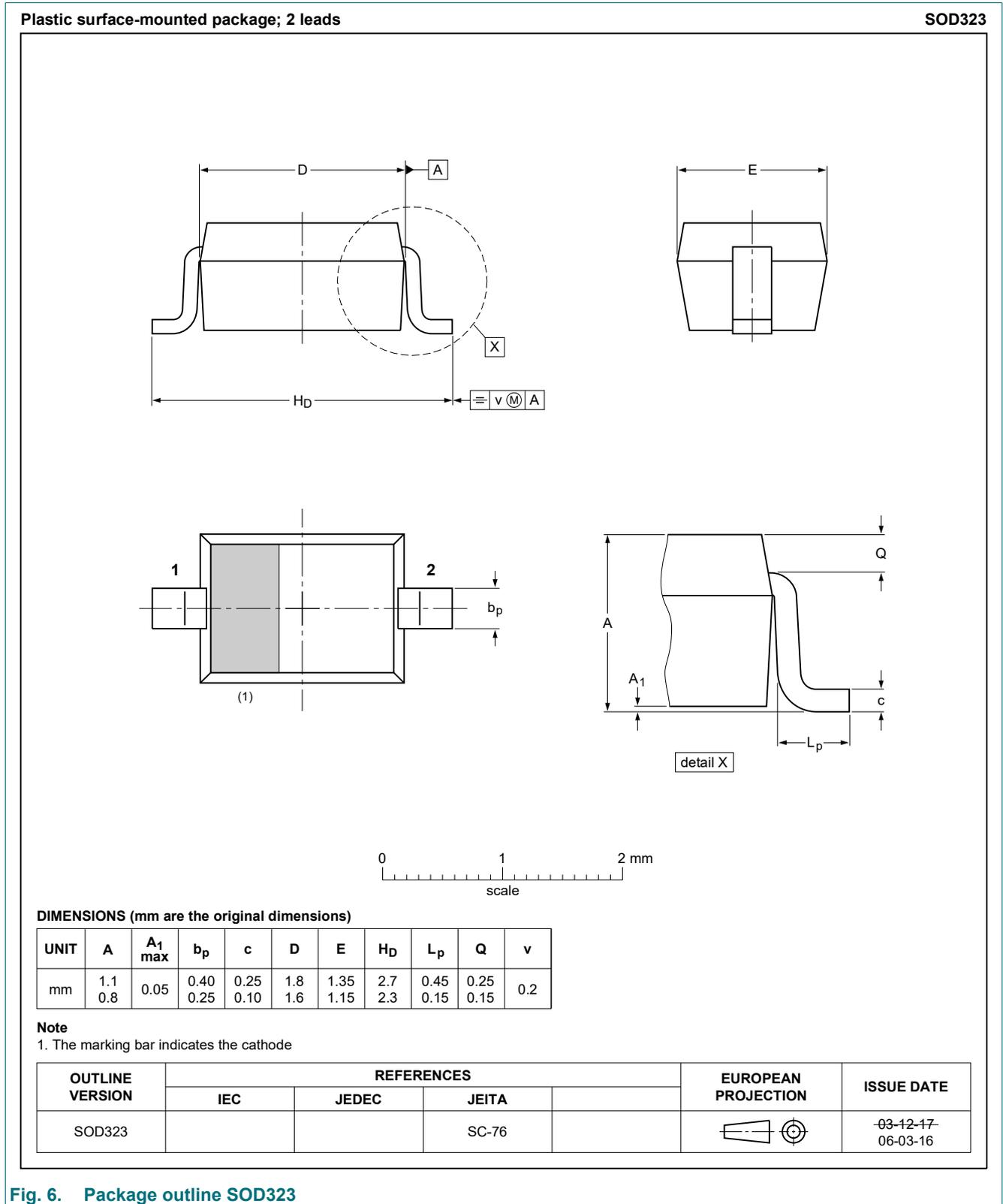


Fig. 6. Package outline SOD323

14. Soldering

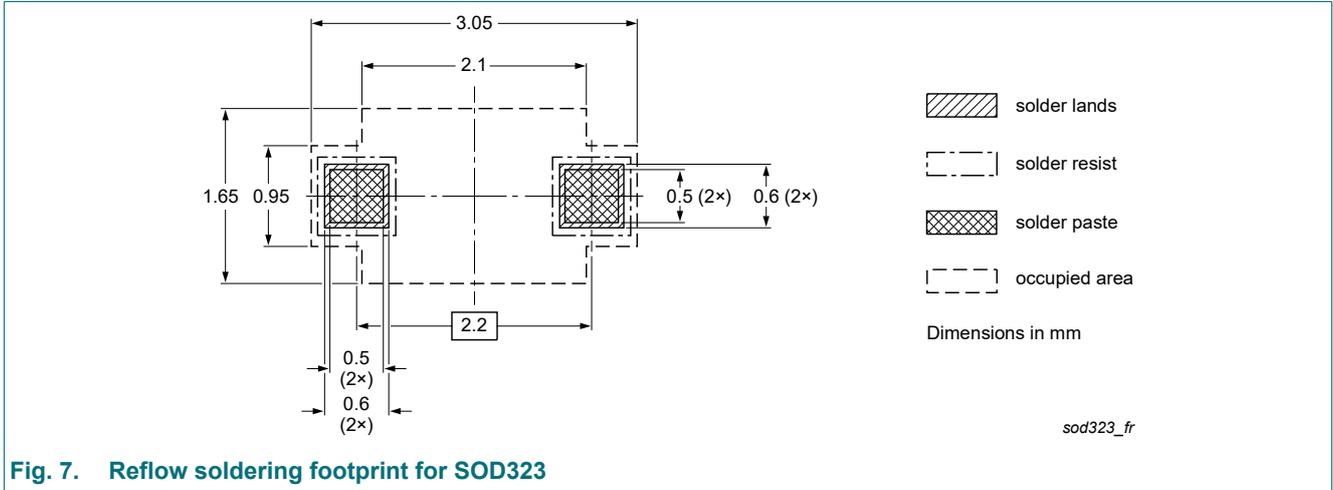


Fig. 7. Reflow soldering footprint for SOD323

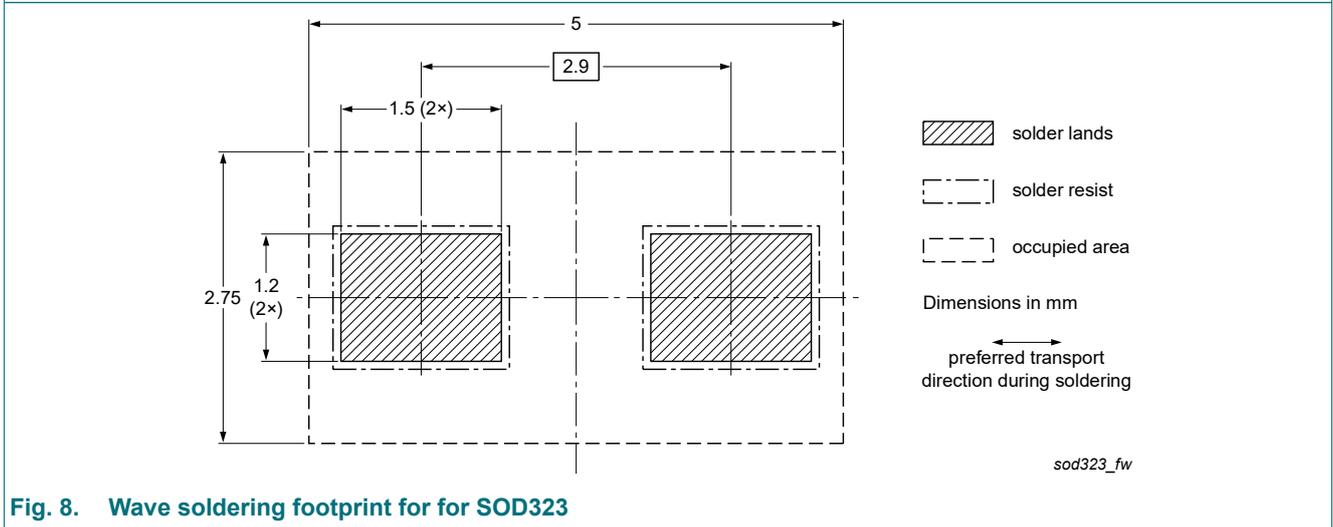


Fig. 8. Wave soldering footprint for SOD323

15. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BZB100A-Q v.1	20250805	Product data sheet	-	-

16. Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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Date of release: 5 August 2025
